REMARKS

I. Claims 21-37 are pending in the present application.

II. Claims 21-37 were rejected under 35 U.S.C. 102(b) as being anticipated by "Tangible Computation Bricks: Building-blocks for Physical Microworlds" ("McNerney"). Although the examiner stated (on page 3) that claims 21-37 were rejected under 35 U.S.C. 102(b), the examiner articulated reasons (on pages 3-4) for rejection of only claims 21-25, 27-28, 31-37 under 35 U.S.C. §102(b). For the reasons set forth below, Applicants respectfully submit that the claims as amended herein overcome this rejection.

Before discussing the rejection, it would be useful to review Applicants' invention. In Applicants' invention, a plurality of rigid members are provided wherein when the plurality of members are connected to one another, they form a stack. Further, when the members are so connected they are also electrically connected. Each member contains a memory for storage of at least one computer program instruction. Collectively the stack comprises a computer program which is for execution by a computer residing external to the stack. In addition, the invention comprises a base block containing a computer for executing a computer program that is stored in a stack external to the base block.

Turning to claim 21, it can be seen that it recites a rigid member having a first surface with a protrusion thereon and a second surface having a receptacle. The protrusion provides for mechanically stacking one stackable block to the receptacle of another stackable block. The receptacle receives the protrusion of another stackable member. Within the rigid member there is provided a memory for storage of at least one computer program instruction. When the plurality of stackable blocks are mechanically stacked, a plurality of instructions are electrically connected forming a computer program. The computer program is "for execution by a computer external to said block." In short, each member has a memory for storage of at least one computer program instruction, and wherein the collective computer program instructions form a computer program, which is executable by a separate computer external to the block. Because the member has only a memory, it is simple and cheap.

Turning to claim 21, the examiner alleged that McNerney discloses a memory for storage of at least one computer program instruction, and cited Page 4 col. 1 as support therefore. Applicants respectfully traverse this characterization of McNerney. Specifically, McNerney discloses *a microprocessor*, not inexpensive memory, in each of its blocks. See: Page 1, right column. See also Figure 3.

> The author has implemented such a system by embedding Logo [23] programmable microprocessors into small, custom-built LEGO® bricks. This system is a powerful exam-

In addition, see Page 3, right column of McNerney which discloses:

> At the core building-block of the system is a programmable microprocessor embedded in a plastic 6x2 LEGO System® brick. The Brick's microprocessor architecture is based on that of the Cricket. [20]. The Cricket is one in a series of small, battery-powered microcontrollers developed at MIT that inspired the commercially successful LEGO Mindstorms RCX "programmable brick." Although the Cricket

Finally, McNerney in Page 4, left column, the same location where the examiner alleged the disclosure, McNerney states:

> A Cricket has two analog sensor ports, two motor control ports, a serial peripheral interface bus, a piezoelectric beeper, a wireless infrared transceiver, but perhaps more importantly, it all fits neatly on top of a 9v battery holder. Not only can programs written in Logo on a PC be downloaded into a Cricket via the infrared link, but the user can observe and debug programs inside a Cricket by typing Logo statements at an interactive command-line interface.

Although McNerney discloses that it provides for a card slot which can accommodate a non-volatile memory interface, there are two deficiencies of this disclosure.

Brick below. The special card slot in the side of the Brick serves a number of (electronic) interface purposes:

- Analog sensor input
- Non-volatile memory interface (e.g. constants)

First, there is no disclosure in McNerney of a memory for storage of at least one computer program instruction in each stackable block, such that when a plurality of stackable blocks are mechanically stacked, a computer program is formed. Further, McNerney appears to disclose at best a non-volatile memory for storage of "constants" – not computer program instructions.

Second, there is no disclosure in McNerney that when the plurality of stackable blocks are mechanically stacked a computer program is formed for execution by a computer external to the block. It appears that at best the non-volatile memory with its constants are executed by the microprocessor contained in the same block.

Having a microprocessor in every stackable block in a stack in contrast to an external one that will execute a stack of memory not only implies a different technology but results in different cost benefits. First, as discussed in the specification (see paragraph [0006]), since one must know how to "program" the stackable Brick to be able to "get under the hood", the toy is clearly not a toy designed to teach programming. In other words, because one must know programming in order to program the stackable bricks, it is not possible to teach programming which is the purpose of the present invention. Second, the use of a microprocessor in each stackable Brick is expensive in contrast with the present invention with its use of inexpensive memory. Therefore, for all these reasons, Applicants respectfully submit that McNerney does not disclose each and every element of claim 21 and does not anticipate claim 21.

With respect to claims 22 and 23, since these are dependent claims that depend on claim 21, for the same reason that claim 21 is not anticipated by McNerney, claims 22 and 23 are also not anticipated by McNerney.

With respect to claim 24, it is also not anticipated by McNerney for the same reasons with respect to claims 22 and 23. However, in addition, claim 24 recites that the memory is a non-volatile memory for the storage of at least one instruction. Although page 4, col. 2 of McNerney discloses that each "Brick" of McNerney

each hand-sized block is roughly equivalent to one Logo statement, for example "go forward," and "turn right 90."

It does not disclose that the function of "programming" is caused by an instruction stored in a non-volatile memory. In fact, because each "Brick" has a microprocessor, the function of each "Brick" is caused by the function of the microprocessor – not a computer program instruction that must be executed by a computer external to the stack, as recited in claim 21. Thus, claim 24 is not anticipated by McNerney.

With respect to claim 25, it depends ultimately on claim 21, and for the same reasons discussed with regard to the non-applicability of McNerney to claim 21, Applicants hereby incorporate those reasons. In addition, however, claim 25 recites that the non-volatile memory stores a plurality of instructions. In response, the examiner alleged that this is disclosed in McNerney at Page 4, col. 1, last paragraph. However, a careful reading of that section of McNerney reveals that it discloses only:

Programming Languages for Children

The work describe here sits squarely between visual programming languages [24, 32], tangible interfaces [12, 15, 34, 35, 37, 39], and "end-user" programming [33]. It focuses specifically on children as programmers. A number of programming systems have been designed for children: Logo [2, 23], ObjectLogo [9], the TORTIS Button Box and Slot Machine [24], ToonTalk [17], Cocoa (a.k.a. KidSim) [32], Agentsheets [11, 26], and AlgoBlock [34, 35], just to name a few. This work follows previous research done at the Epistemology and Learning group at the MIT Media Lab, where researchers have developed a number of computational toys [18, 29, 30] designed with education in mind. The Tangible Computation Bricks project was heavily influenced by the methodology and research agenda of the "Beyond Black Boxes" (BBB) initiative, designed to encourage kids to explore science by building their own scientific apparatus.

Applicants hereby invite the examiner to explain how this paragraph discloses the non-volatile memory stores a plurality of instructions. Applicants respectfully submit that this rejection is in error.

With respect to claims 27-28, these claims are dependent claims that depend on claim 21. For the same reason that claim 21 is not anticipated by McNerney, claims 27 and 28 are also not anticipated by McNerney.

With respect to claim 31, it recites that the stackable block has a port for connecting to another stackable block, where the other stackable block has a memory for storing an (un)conditional branching computer program instruction. The port is for connecting to the (un)conditional branching computer program instruction.

With respect to claim 31, it depends on claim 21, and for the same reasons as discussed previously claim 31 is not anticipated by McNerney. Further, the examiner alleged that claim 31 is anticipated by McNerney based upon the disclosure on page 4 and col. 1. However, a careful review of page 4 and col. 1 of McNerney shows that McNerney does not disclose each and every element of claim 31, and thus does not anticipate claim 31. Specifically, although McNerney discloses a port in its "Brick", for the "Brick" to respond to communication from the "Brick" below, there is no disclosure that the port is for connecting to an (un)conditional branching computer program instruction in the other "Brick". Thus, the rejection of claim 31 based upon McNerney is in error.

With respect to claim 32, it is dependent upon claim 21. Therefore, for the same reasons stated with regard to the rejection of claim 21 as being in error, Applicants reiterate those reasons. Furthermore, claim 32 recites the stackable block as having a port for connecting to the computer program instruction that is stored in a memory of another stackable block. Applicants respectfully submit that McNerney does not teach this feature of claim 32. Specifically, although McNerney teaches a port in its stackable port, McNerney does not teach that port being connectable to the computer program instruction of another stackable block. Thus, p. 4, col. 1 cited by the examiner, as allegedly disclosing the elements of claim 32, merely states:

> and a second serial peripheral bus. This additional bus port allows the Brick to respond to communications from the Brick below. The special card slot in the side of the Brick

Note, that this passage of McNerney does not disclose that the port is connectable to the computer program instruction in a memory of a stackable block. Therefore, for this additional

reason, Applicants respectfully submit that the rejection of claim 32 based upon McNerney is in error.

Claim 33 is an independent claim. It recites a board which can be adapted to fit into a stack of one or more blocks with each having a non-volatile memory for the storage of one or more computer program instructions forming a computer program. The board has a computer for receiving the computer program when the stack is fitted onto the board and for executing the computer program. Thus, necessarily, the computer program which is executed by the computer is external to the board. In rejecting claim 33, the examiner asserted that it is fully anticipated by McNerney as allegedly disclosed in McNerney at p. 3, col. 2 – page 4, col. 1. Applicants respectfully traverse this rejection.

Specifically, as disclosed in McNerney (page 3, col. 2), each stackable brick of McNerney has a microprocessor which is programmable.

> At the core building-block of the system is a programmable microprocessor embedded in a plastic 6x2 LEGO System® brick. The Brick's microprocessor architecture is based on that of the Cricket. [20]. The Cricket is one in a series of small, battery-powered microcontrollers developed at MIT that inspired the commercially successful LEGO Mindstorms RCX "programmable brick." Although the Cricket

Thus, the microprocessor of McNerney within each brick is programmed by the instructions contained within the brick. In short, McNerney's board does not receive a computer program from a stack wherein the stack is external to the board and contains one or more computer program instructions that form a computer program. Therefore, the rejection of claim 33 based upon McNerney is in error.

Claims 34-35 depend on claim 33, and for the same reasons stated heretofore with regard to the erroneous rejection of claim 33 based upon McNerney, Applicants reiterate those reasons herein.

Claim 36 depends on claim 33, and for the same reasons stated heretofore with regard to the erroneous rejection of claim 33 based upon McNerney, Applicants reiterate those reasons herein. However, in addition, claim 36 recites the block having a compiler associated with the computer for compiling the computer program from the stack to generate a compiled computer program and for executing the compiled computer program. The examiner alleged that a

compiler is disclosed by McNerney at page 3, col. 2 – page 4, col. 1. Applicants respectfully request the examiner to disclose in greater particularity as to where this is disclosed by McNerney. Applicants have reviewed the passage cited by the examiner and are unable to discern the disclosure of a compiler as recited in claim 36.

Claim 37 depends on claim 33, and for the same reasons stated heretofore with regard to the erroneous rejection of claim 33 based upon McNerney, Applicants reiterate those reasons herein. However, in addition, claim 37 recites the block having an interpreter associated with the computer for interpreting the computer program from the stack to generate an interpreted computer program and for executing the interpreted computer program. The examiner alleged that an interpreter is disclosed by McNerney at page 3, col. 2 – page 4, col. 1. Applicants respectfully request the examiner to disclose in greater particularity as to where this is disclosed by McNerney. Applicants have reviewed the passage cited by the examiner and are unable to discern the disclosure of an interpreter as recited in claim 37.

Therefore for all these reasons, Applicants respectfully submit that the rejection of claims 21-25, 27-28, 31-37 under 35 U.S.C. §102(b) as being anticipated by McNerney was improper.

III. Claims 26, 29-30 were rejected under 35 U.S.C. 103(a) as being unpatentable over McNerney.

In rejecting claim 26, the examiner asserted that McNerney discloses all of the claimed subject matter with the exception of the disclosure of storing a copyright protected work in memory. Claim 26 depends on claim 21. Thus, claim 26 also has all of the limitations of claim 21. As discussed previously, claim 21 is not anticipated by McNerney, **because McNerney does not disclose 1) a memory for storage of at least one computer program instruction, such that when a plurality of stackable blocks are mechanically stacked, a computer program is formed; and 2) when the plurality of stackable blocks are mechanically stacked a computer program is formed for execution by a computer external to the block.** Thus, even if it were obvious that storing a copyright protected work in memory is not unique, an assumption not conceded by Applicants, the rejection would still not result in Applicants' invention as claimed in claim 26, for the above stated reasons, with regard to claim 21, from which claim 26 depend.

With respect to the rejection of claims 29 and 30, the examiner alleged that McNerney discloses all of the claimed subject matter with the exception of disclosing the feature of a block that is substantially rectilinearly shaped (claim 29) and asymmetrically shaped (claim 30).

However, claims 29 and 30 depend on claim 21. For the same reasons articulated with respect to the improper rejection of claim 26, Applicants reiterate those reasons, and respectfully request reconsideration of claims 29-30.

For the foregoing reasons, Applicants respectfully submit that the claims as amended herein are now in condition for allowance.

Respectfully submitted,

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